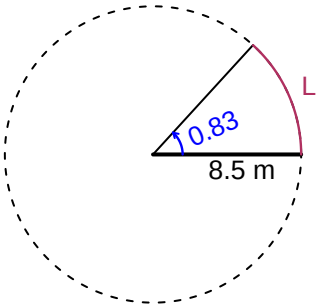
Name: Date:

Trig Final (Practice v38)

- You should have a calculator (like Desmos) and a unit-circle reference sheet.

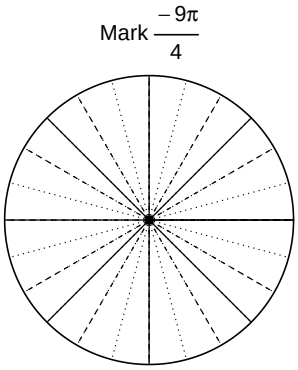
Question 1

In the figure below, we see a circle and a central angle that subtends an arc. The angle measure is 0.83 radians. The radius is 8.5 meters. How long is the arc in meters?

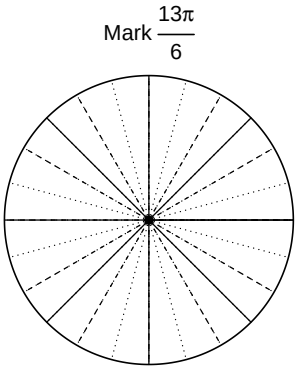


Question 2

Consider angles $\frac{-9\pi}{4}$ and $\frac{13\pi}{6}$. For each angle, use a spiral with an arrow head to **mark** the angle on a circle below in standard position. Then, find **exact** expressions for $\cos\left(\frac{-9\pi}{4}\right)$ and $\sin\left(\frac{13\pi}{6}\right)$ by using a unit circle (provided separately).



Find $\cos(-9\pi/4)$



Find $\sin(13\pi/6)$

Question 3

If $\sin(\theta) = \frac{-77}{85}$, and θ is in quadrant IV, determine an exact value for $\tan(\theta)$.

Question 4

A mass-spring system oscillates vertically with a frequency of 6.62 Hz, an amplitude of 4.8 meters, and a midline at $y = -7.75$ meters. At $t = 0$, the mass is at the minimum height. Write an equation to model the height (y in meters) as a function of time (t in seconds).